

(12)特許協力条約に基づいて公開された国際出願

(19) 世界知的所有権機関  
国際事務局(43) 国際公開日  
2004 年 5 月 6 日 (06.05.2004)

PCT

(10) 国際公開番号  
WO 2004/038522 A1

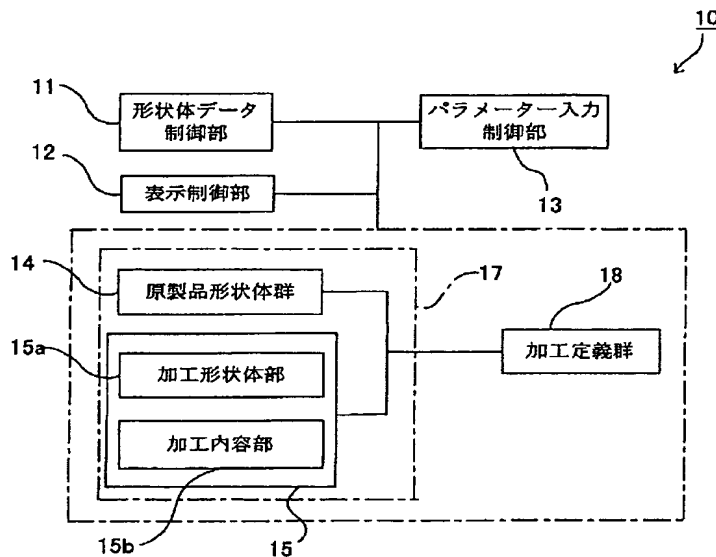
(51) 国際特許分類: G05B 19/4097, B23Q 15/00  
(21) 国際出願番号: PCT/JP2003/013524  
(22) 国際出願日: 2003 年 10 月 23 日 (23.10.2003)  
(25) 国際出願の言語: 日本語  
(26) 国際公開の言語: 日本語  
(30) 優先権データ:  
特願 2002-311264  
2002 年 10 月 25 日 (25.10.2002) JP  
PCT/JP03/05224 2003 年 4 月 24 日 (24.04.2003) JP  
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(81) 指定国 (国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

[続葉有]

(54) Title: CAD SYSETM. PROGRAM FOR RUNNING THE SYSTEM, AND RECORDING MEDIUM HAVING THE PROGRAM RECORDED THEREIN

(54) 発明の名称: CADシステム並びにこれを実行するためのプログラム及びこのプログラムを記録した記録媒体



11...SHAPE BODY DATA CONTROL PART  
12...DISPLAY CONTROL PART  
13...PARAMETER INPUT CONTROL PART  
14...ORIGINAL PRODUCT SHAPE BODY GROUP  
15a...MACHINED SHAPE BODY PART  
15b...MACHINING CONTENTS PART  
18...MACHINING DEFINITION GROUP

(57) Abstract: A CAD system capable of generating the shape body of a machined portion and the contents of machining by automatically recognizing the machined portion by utilizing CAD data on product shape only, comprising a machining information group (15) having a machined shape body part (15a) storing the portion where material is removed by machining as the shape body for each machining and a machining contents part (15b) storing tools and parameters as information on the contents of machining in connection with the shape body and a machining definition group (18) defining a plurality of machining types beforehand.

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Fig.1

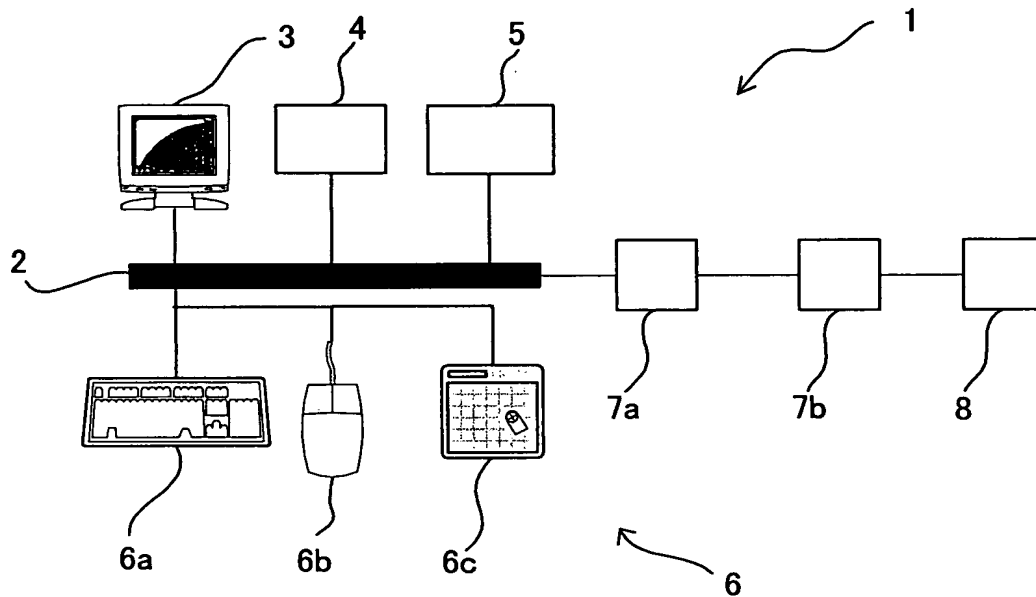
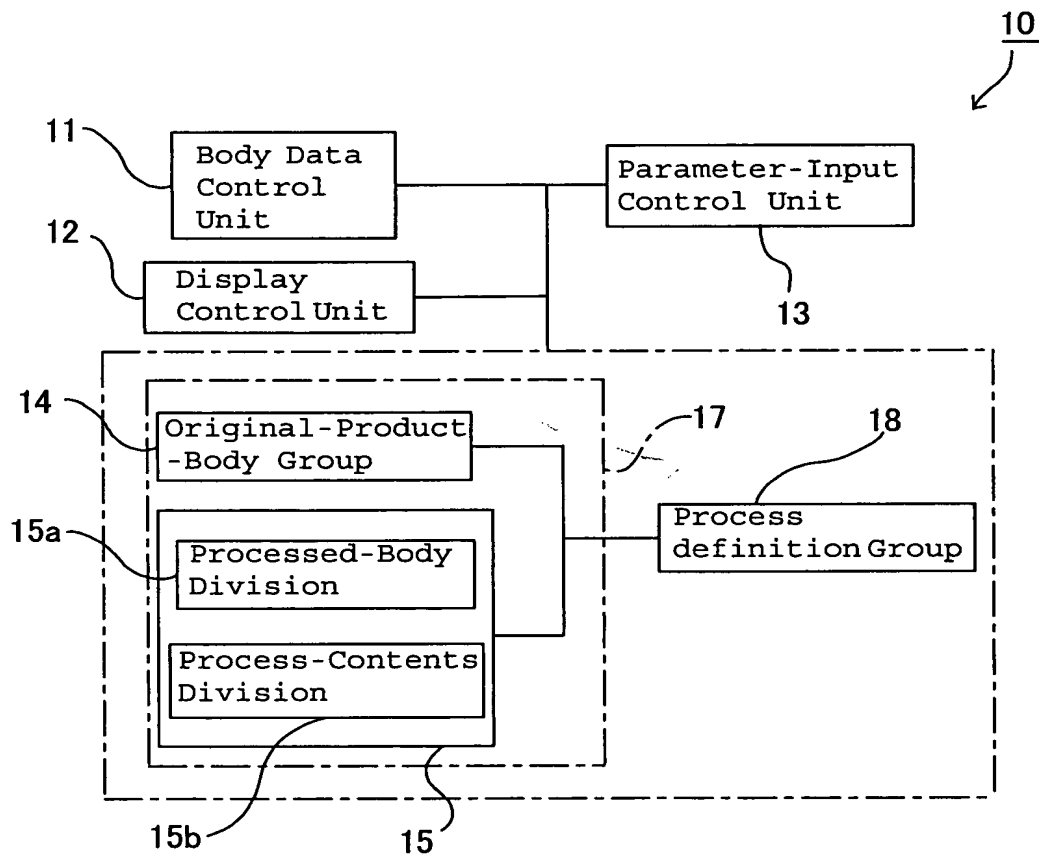
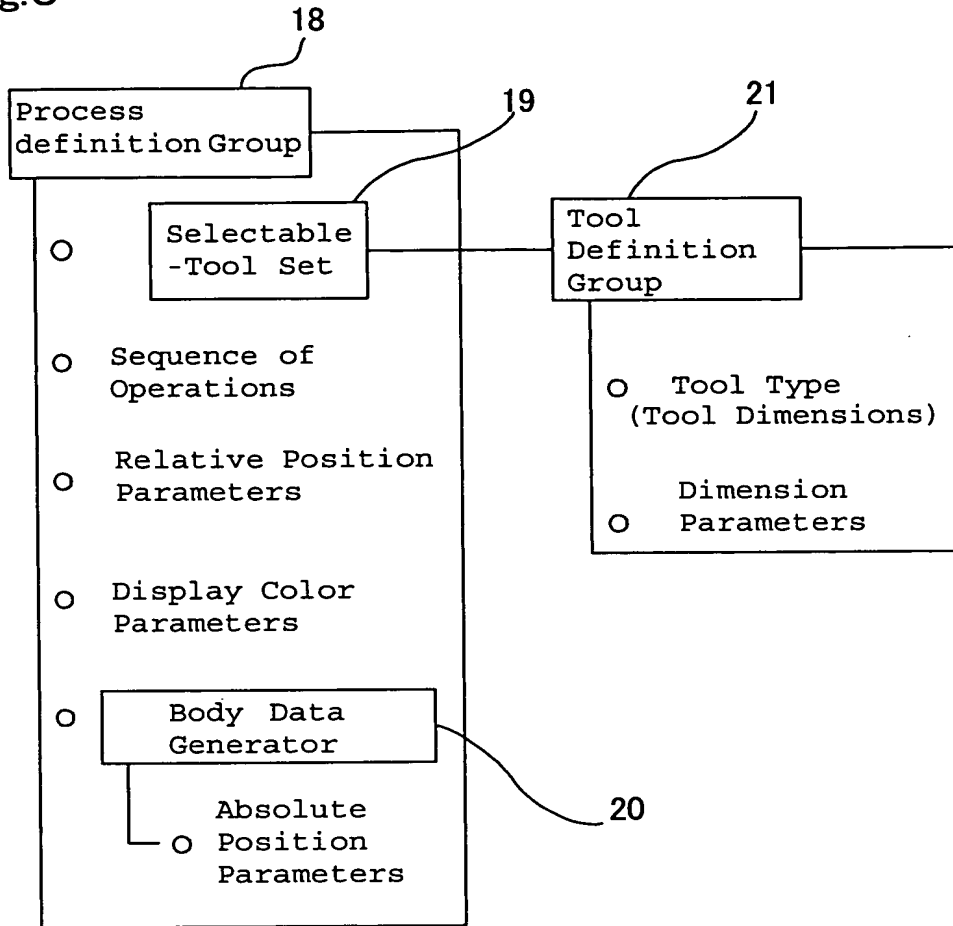


Fig.2



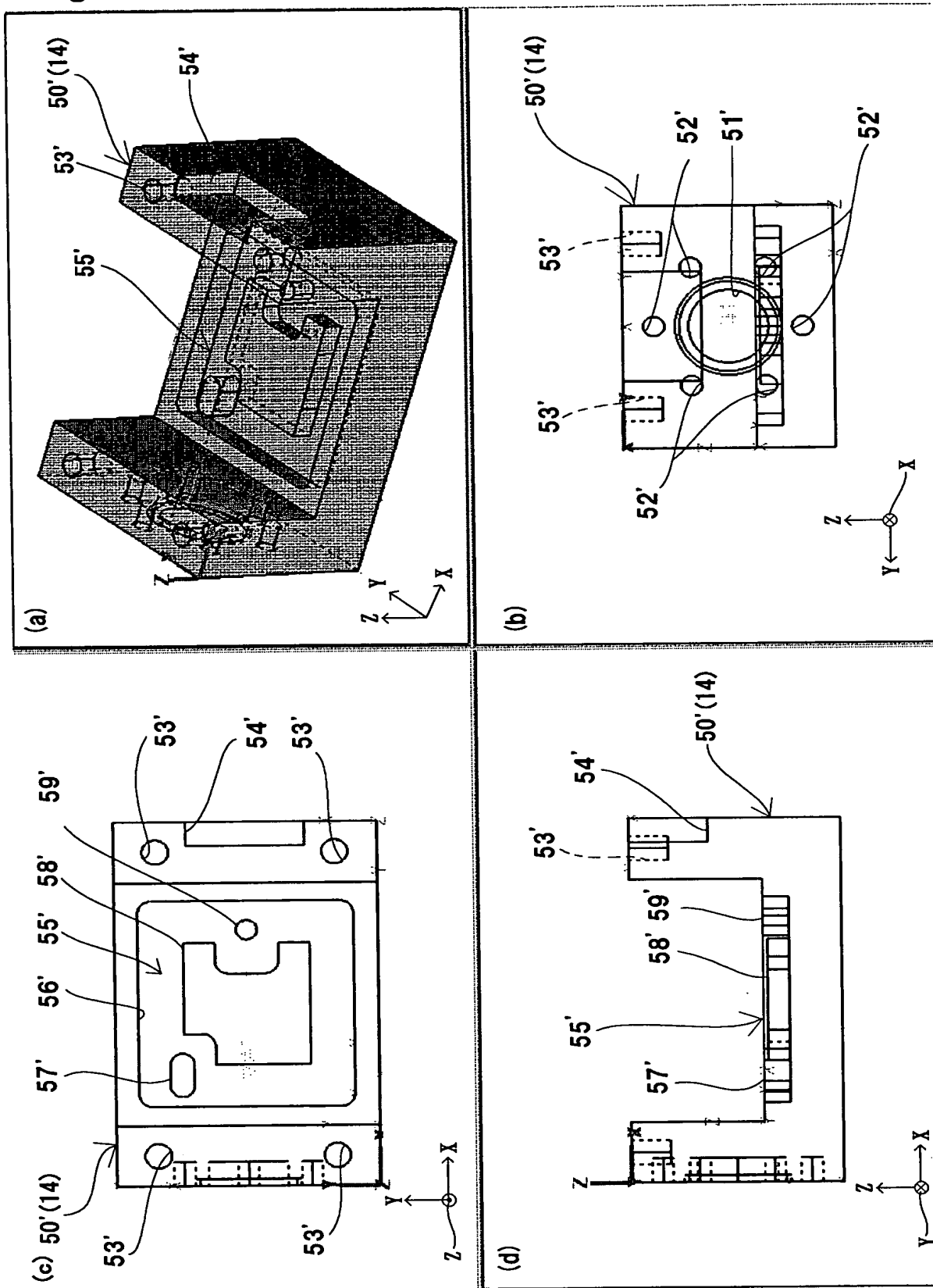
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Fig.3



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Fig.4



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Fig.5

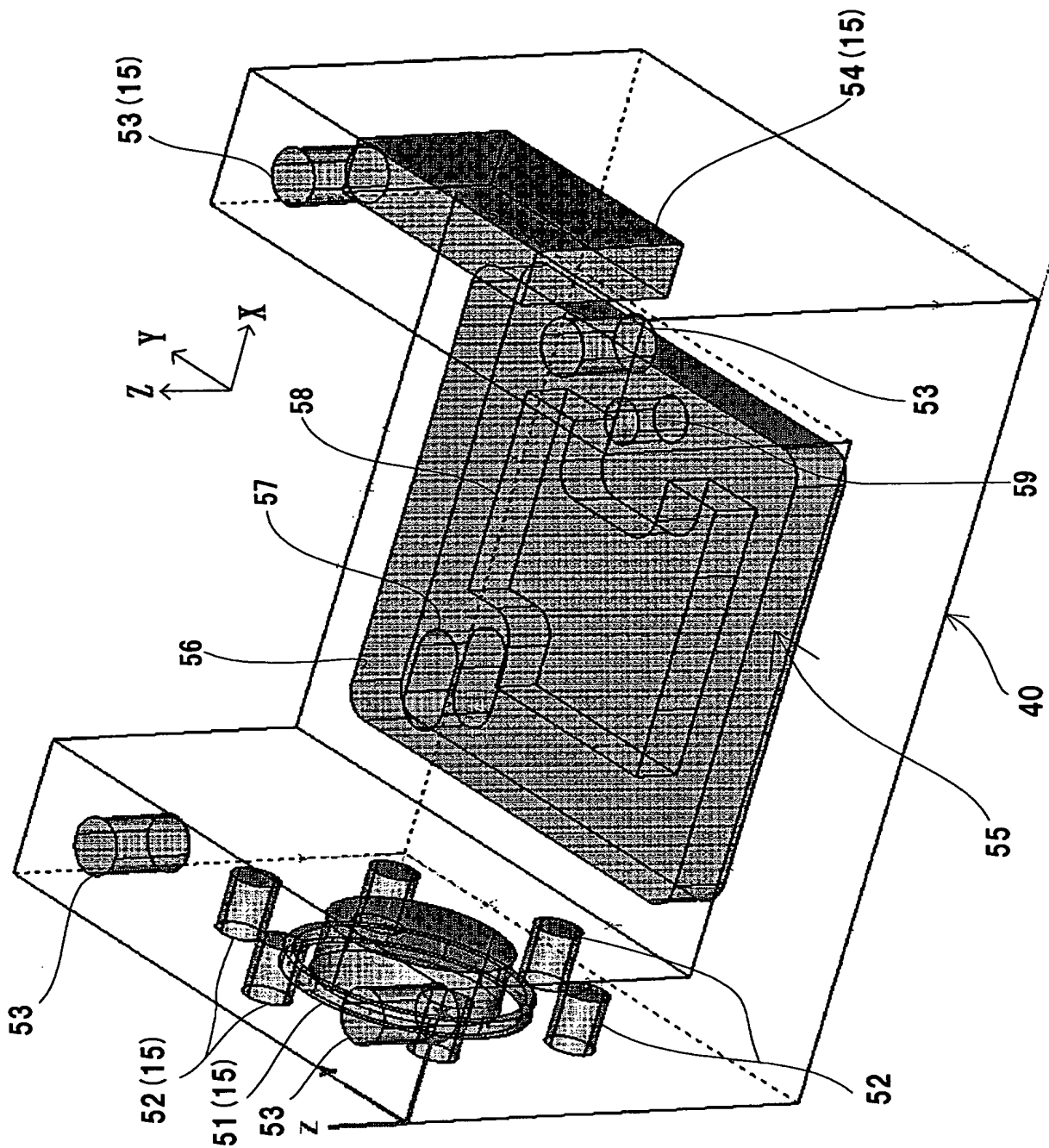
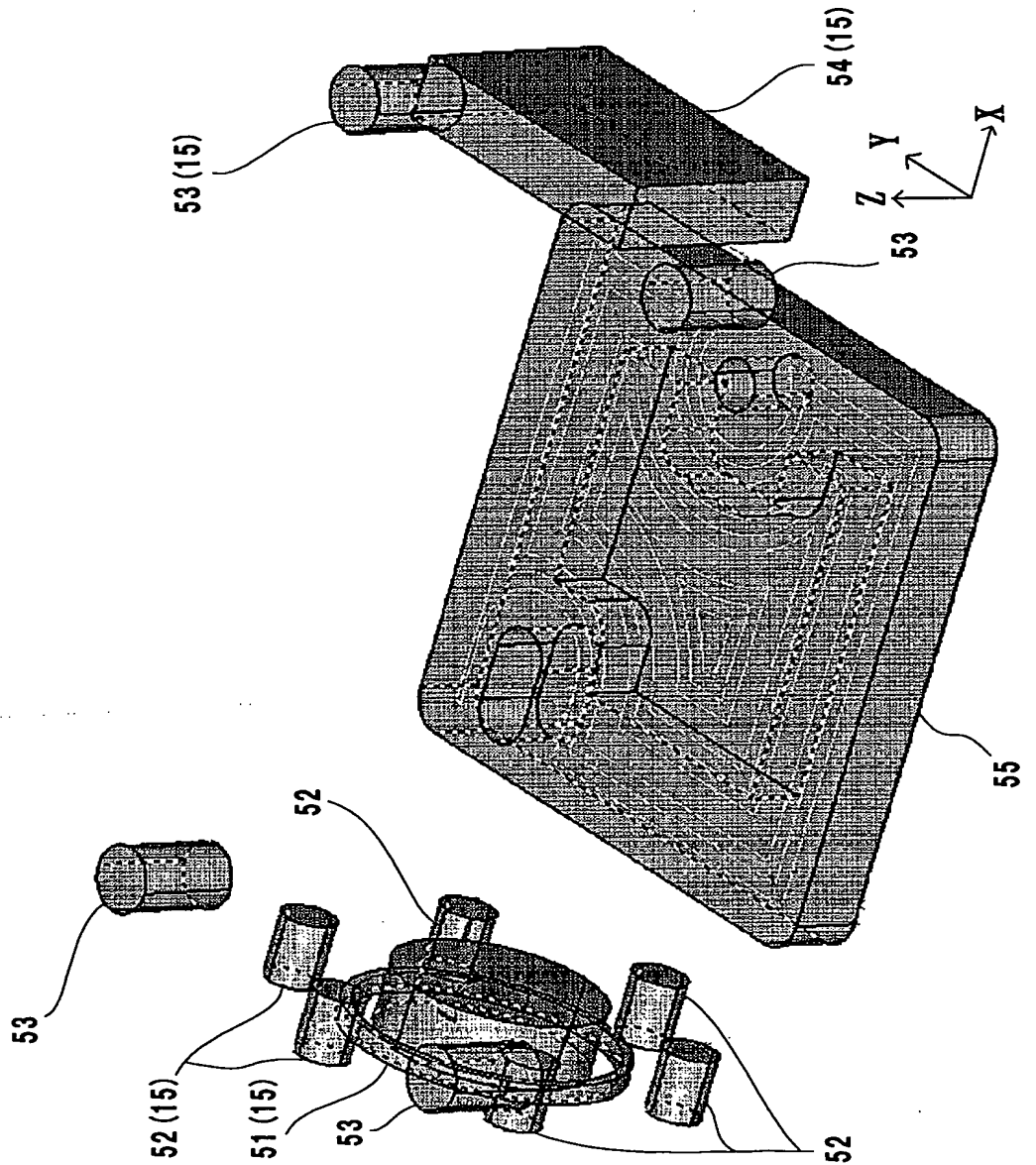
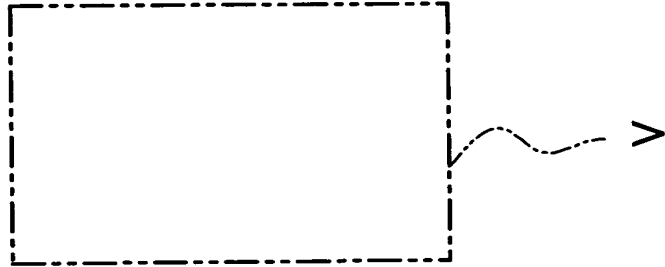


Fig.6



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Fig.7

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Tool List

No	Tool Name	Diameter	Surface	Machining No.
1	Center drill	3,000	0	1
2	Center drill	3,000	0	2
3	Center drill	3,000	2	4
4	Center drill	3,000	2	5
5	Drill (High speed)	8,000	2	4
6	Drill (High speed)	8,000	2	5
7	Drill (High speed)	9,000	0	1
8	Drill (High speed)	10,000	0	2
9	Drill (High speed)	10,000	0	2
10	Drill (High speed)	20,000	2	5
11	Mill drill	9,500	0	1
12	rough-mil	10,000	0	2
13	rough-mil	10,000	0	2
14	rough-mil	10,000	0	2
15	rough-mil	10,000	0	2

☐ Tool
 ☐ Surface
 ☐ Machining

Type of machining	Pocket making
Sub Number	0
Step	50,000
Relief	50,000
Machining Depth	1,667
Approach speed	100,000
Cutting speed	100,000
Offset direction	Left ▼
User definition	

☐ Keep display
 ☐ Display tools

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Fig.8

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List of Selected Tools

	Tool Name	Diameter	Machining diameter	Machining depth
1	Center drill	3,000	3,000	3,000
2	Drill (Highspeed)	9,000	9,000	17,600
3	Mill drill	9,500	9,500	15,000
4	Reamer (Highspeed)	10,000	10,000	15,000

OK

Cancel

Add

Delete

Fig.9

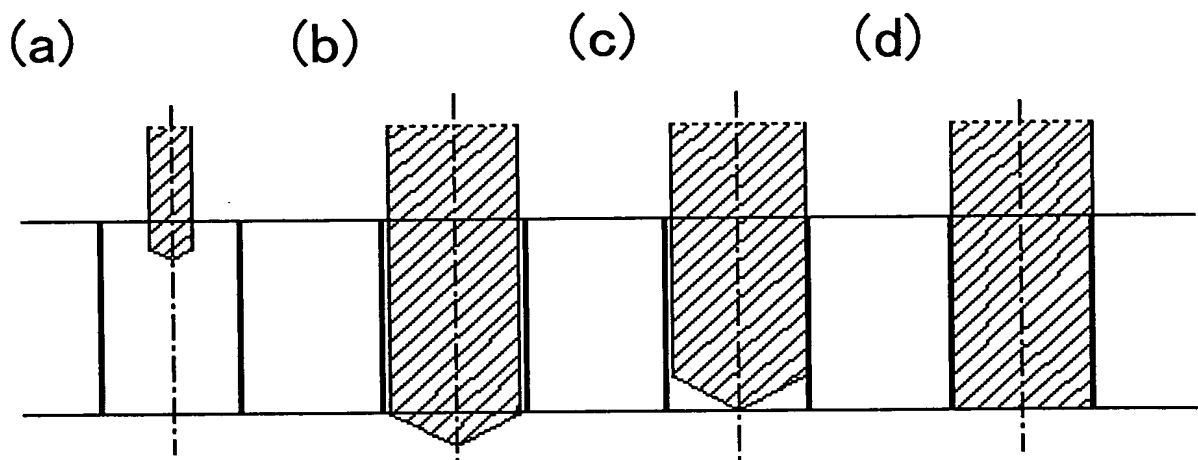




Fig.10

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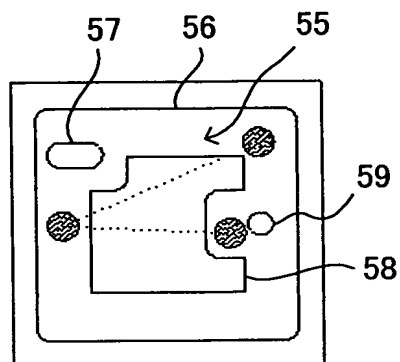
Profile: Re-machining

	Operation	
1	Start-hole drilling	▼
2	Pocket making	▼
3	Removing uncut part	▼
4	Outlining	▼

Add operation    Delete operation    Begin operation

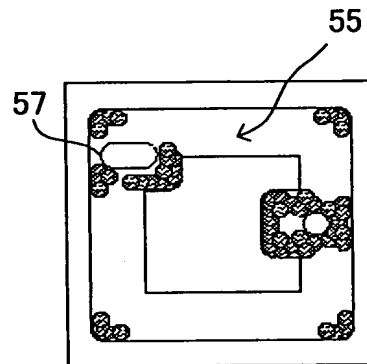
Fig.11

(a)



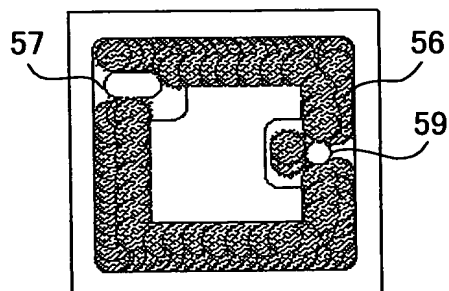
Start-hole drilling

(c)



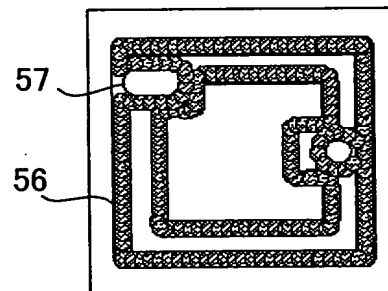
Removing uncut part

(b)



Pocket making

(d)



Outlining

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Fig.12

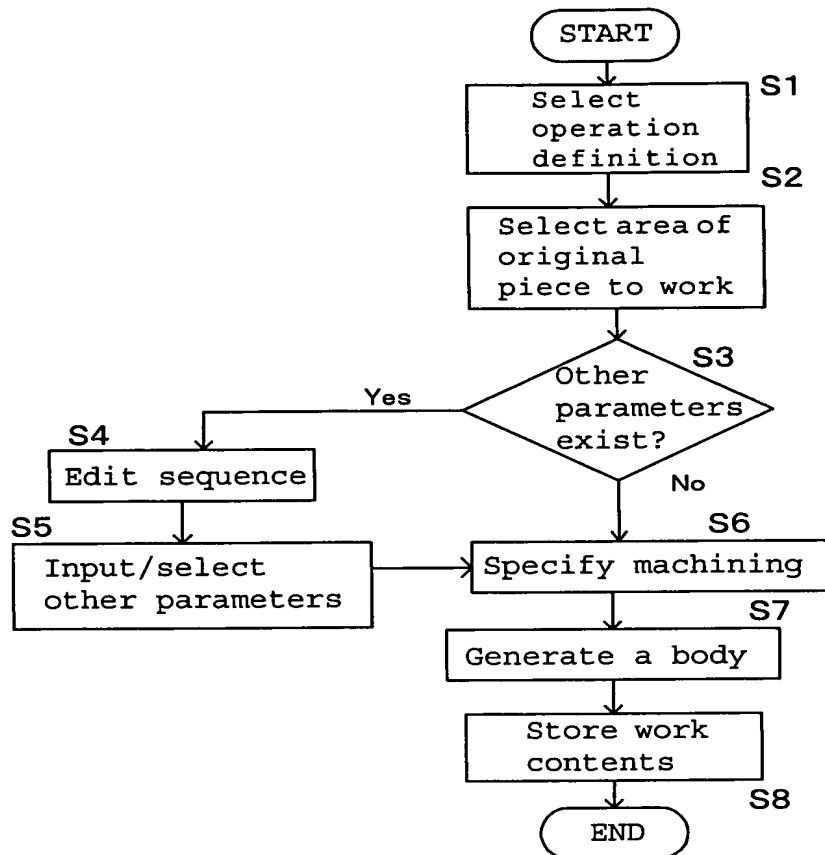


Fig.13

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Hole Finishing Tool Selection

☒ First step: Diameter (mm)  
Top Surface 10,000

Drilling (High speed) ▼

Drill (High speed) 9.000 9.000

☐ [ ]

☐ [ ]

☐ [ ]

☒ Hole Number of holes: 4

Edit sequence (75b)

Start machining (75a)

Fig. 14

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List of Selected Tools

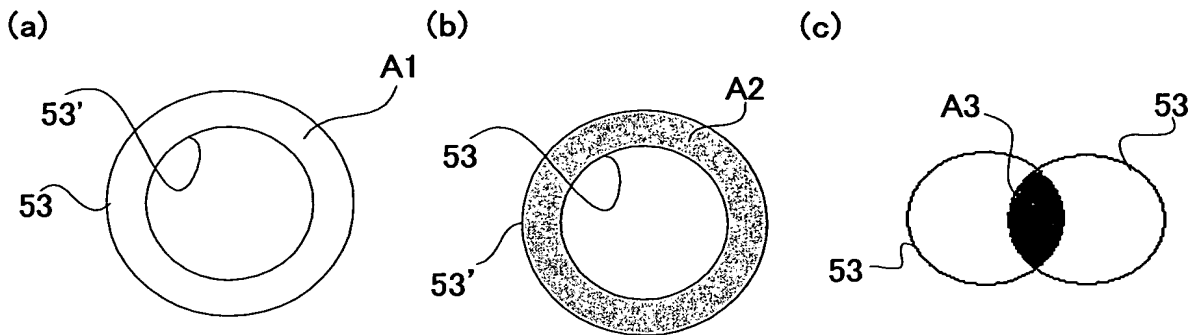
	Tool Name	Tool diameter	Machining diameter	Machining depth	Drilling depth per cycle [PC]
1	Center drill	3,000	3,000	3,000	3,000
2	Drill (High speed)	9,000	9,000	17,600	17,600

76a

76b

Add tool Delete tool OK Return to machining condition entry

Fig. 15



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/13524

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> G05B19/4097, B23Q15/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> G05B19/18-19/46, B23Q15/00-15/28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2003  
Kokai Jitsuyo Shinan Koho 1971-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	JP 11-129141 A (Toyota Motor Corp.), 18 May, 1999 (18.05.99), Par. Nos. [0015] to [0017], [0029] to [0045]; Fig. 2 (Family: none)	1, 5, 6, 11, 12 2-4, 7-10
Y	JP 2001-62676 A (Canon Inc.), 13 March, 2001 (13.03.01), Par. Nos. [0032] to [0035]; Figs. 4 to 10 (Family: none)	2-4, 9, 10
Y	JP 11-235646 A (Toyota Central Research And Development Laboratories, Inc.), 31 August, 1999 (31.08.99), Par. Nos. [0052] to [0054]; Figs. 4 to 8 (Family: none)	3, 4

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

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considered novel or cannot be considered to involve an inventive  
step when the document is taken alone"Y" document of particular relevance; the claimed invention cannot be  
considered to involve an inventive step when the document is  
combined with one or more other such documents, such  
combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

08- December, 2003 (08.12.03)

Date of mailing of the international search report

24- December, 2003 (24.12.03)

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP03/13524

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 1-233617 A (Fuji Xerox Co., Ltd.), 19 September, 1989 (19.09.89), Page 1; lower right column, lines 10 to 16; Fig. 4 (Family: none)	7, 8
A	JP 2002-116807 A (Toyota Motor Corp.), 19 April, 2002 (19.04.02), Full text; all drawings (Family: none)	1-12